

**ABSTRACT**

Silicon etchants described herein are aqueous solutions that comprise at least one of potassium hydroxide or tetramethyl ammonium hydroxide; at least one additive, wherein the  
5 additive comprises at least two of the following physical properties: water-soluble, non-volatile and non-flammable; and an aqueous environment that comprises at least one solvent or solvent blend. Methods of producing a selective silicon etchant include: a) providing at least one of potassium hydroxide or tetramethyl ammonium hydroxide; b) providing at least one additive, wherein the additive comprises at least two of the following physical properties:  
10 water-soluble, non-volatile and non-flammable; c) providing an aqueous environment that comprises at least one solvent or solvent blend; and d) blending the at least one potassium hydroxide or tetramethyl ammonium hydroxide with the at least one additive in the aqueous environment in order to form a solution that can be utilized as a selective silicon etchant.